Science Toolkit: Grade 7 Objective 1.D.2.a

Standard 1.0 Skills and Processes

Topic D. Technology

Indicator 2. Analyze, design, assemble and troubleshoot complex systems.

Objective a. Provide evidence that a system can include processes as well as things.

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Science Grade 7 Indicator 1.D.2

Designed Systems

Systems thinking can now be made explicit—suggesting analysis of parts, subsystems, interactions, and matching. Student projects should now entail analyzing, designing, assembling, and troubleshooting systems—mechanical, electrical, and biological—with easily discernable components. The idea of system should be expanded to include connections among systems. For example, a can opener and a can may each be thought of as a system, but they both—together with the person using them—form a larger system without which neither can be put to its intended use.

Introduction

Science Grade 7 Standard 1

At this level, students need to become more systematic and sophisticated in conducting their investigations, some of which may last for weeks or more. This means closing in on an understanding of what constitutes a good investigation and explicitly discussing how explanation relates to experimental design. Even though the main purpose of student investigations is to help students learn how science works, it is important to back up such experience with selected readings. Scientific explanation of the material world is built on theories and this is a good time to introduce a) an understanding of how theories are constructed and find both historical and modern examples of the theory development process; and b) an appreciation for the explanatory and predictive power of theories. By the end of Grade 8, children will have had multiple experiences applying and practicing all of the listed science skills and processes across the concept areas.